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ABSTRACT

The amount and type of peer interaction occurring in four racially mixed eighth grade classrooms were studied. Observational data were collected on the peer-directed behaviors of 69 white children and 32 black children weekly during one semester. The race and sex of the person to whom each behavior was directed were recorded as were the affective tone (positive, negative, neutral) and the focus (task oriented, ambiguous, social) of the behavior. Findings indicated that children interacted more with peers of their own sex than with peers of the other sex. Children also tended to interact more with peers of their own race. Girls demonstrated strong own-race preferences while boys interacted cross-racially at approximately the same rate that would be expected if race were not a factor in interactant choice. Analysis of the data on the affective tone of the interactions suggested that negative behaviors were very rare. No differences in the tone or the focus of interracial or intraracial interactions of the children were found.  
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The Impact of Race on Interaction in a  
Desegregated School

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## Abstract

This study explored the amount and type of peer interaction occurring in four racially mixed eighth grade classrooms. Observational data were gathered on the peer-directed behaviors of 69 white children and 32 black children each week during the course of a semester. The race and sex of the person to whom each behavior was directed were coded as were the affective tone (positive, neutral, negative) and the focus (task-oriented, ambiguous, social) of the behavior. A 2x2x2x2 analysis of variance (race of subject x sex of subject x race of interactant x sex of interactant) and pairwise t-test comparisons confirmed the hypothesis that children interact more with peers of their own sex than with peers of the other sex,  $F (1, 97) = 642.9$ ,  $p < .001$ . Similarly, as predicted, children also showed a tendency to interact more with peers of their own race than with peers of the other race,  $F (1, 97) = 56.6$ ,  $p < .001$ . However, planned comparisons revealed that this latter tendency was due, as predicted, to the very strong own-race preference of the girls,  $t (49) = 12.01$ ,  $p < .001$ . In sharp contrast, the boys interacted cross-racially at approximately the rate which would be expected if race were not a factor in interactant choice,  $t (49) = 1.03$ , n.s. This study found considerably greater amounts of peer interaction than have previous studies conducted in non-academic settings in interracial schools. Analysis of the data on the affective tone of the interactions suggested that negative behaviors were very rare, constituting only one percent of all peer interactions. An analysis of variance (race of subject x sex of subject x race of interactant x tone) suggested no major differences in the tone of the inter- or intra-racial interactions of the children in the four sex-race subgroups of the children. Similarly, there were no differences in the focus of the inter- or intra-racial interactions of the children of the four sex-race subgroups.

There has been a great deal of research on the racial attitudes of children in desegregated schools. (For reviews of this literature see Carithers, 1970; Cohen, 1975; McConahay, 1978; Schofield, 1978; St. John, 1975; and Stephan, 1978.) In contrast, there are extremely few direct studies of interracial behavior in such schools. This fact is vividly illustrated by examination of St. John's (1975) list of studies on desegregation and intergroup behavior. The large majority of these studies used variants on traditional sociometric techniques (Moreno, 1934) which involve asking people to report whom they would choose to interact with in various situations. Rather remarkably, only one of the 19 studies St. John cites involved actual observation of intergroup behavior in a desegregated school. The widespread use of sociometric measures to the virtual exclusion of direct observation of that behavior is unfortunate for a number of reasons. Almost all of the data suggesting that choices on sociometric tests reflect actual behavior choices have been gathered in white classrooms (Biehler, 1954; Bonney & Powell, 1953; Byrd, 1951). Since race relations is a highly charged and controversial topic one might expect sociometric measures, like other self-reports, to be markedly influenced by social desirability biases and evaluation apprehension (Rosenberg, 1969). In addition, even if sociometric choices were shown to be strongly associated with actual behavioral patterns in interracial classrooms, there is still some question of how appropriate these techniques are for assessing intergroup behavior in desegregated schools. Sociometric measures generally require the child to give the names of a very small number of other children who are the most preferred as friends or companions for various activities. Thus, these measures have typically focused on assessing fairly intense positive relationships rather than on more neutral sorts of relationships. Yet, these less intense relation-

ships are most probably both more numerous and more open to change than are friendships. Furthermore, Cohen (1975) makes a convincing argument that such relationships should be of considerably more interest than interracial friendships to policy makers concerned with the outcomes of desegregated schooling. Thus, observational research, which directly studies peer interactions in classrooms, appears to be needed.

Awareness of the need to study directly the behavior of students in desegregated schools has become increasingly intense in the past decade (National Institute of Education, 1974; Rist, 1979; Schofield, 1978; St. John, 1975). This growing awareness has spawned two new directions in research. First, there has been a spurt of interest in detailed, primarily qualitative, case studies of desegregated schools. Examples of such work can be found in Rist (1979) and Wax (in press). However, the very strengths of such studies are also potential sources of weakness. The breadth of focus and the exploratory and potentially subjective nature of the data gathering techniques often make it difficult for such studies to speak with authority on some of the individual pieces of the larger picture. Fortunately, the second type of research which has begun to appear relatively recently, the quantitative observational study, has its forte here. Generally, these quantitative observational studies focus on some specific aspect of peer behavior in desegregated schools. Such studies, like the ethnographic case studies, are relatively few in number compared to the multitude of attitudinal studies. Indeed, to our knowledge, no more than six have been published to date (Schofield, 1979; Schofield & Sagar, 1977; Serow & Solomon, 1979; Shaw, 1973; Silverman & Shaw, 1973; Singleton & Asher, 1977) and some of these studies give no information on the amount of interracial interaction that occurs, but

rather correlate the amount of interaction with characteristics of the school or classroom. Yet, these studies, combined with the qualitative case studies, are beginning to give us the first glimpse of interracial behavior in desegregated schools.

These studies strongly suggest that children interact primarily within own-race groups. The extent of the racial clustering in desegregated schools varies markedly, but such clustering appears to occur almost everywhere. In some schools the informal resegregation seems almost total. For example, Cusick and Ayling (1973) report that they were unable to have a discussion with a racially mixed group over lunch at a high school because the informal pattern of segregated black and white tables was so strong that students were unwilling to break it. Schofield and Sagar (1977) found somewhat more mixing than most studies. However, they report levels of interracial interaction that are still quite low. For example, at the end of one year of desegregation under very favorable circumstances, black and white students sat next to each other at lunch about one-fifth as often as they would have if race did not enter into seating choices.

The finding of complete or near complete resegregation may well be due to a large extent to the particular settings in which students have been observed. The studies cited above almost without exception observed behavior in an unsupervised setting in which there was little, if any, task orientation. These settings, such as school lunchrooms, are also those in which students spend relatively little of their school day and in which they may be particularly likely to associate with close friends. In order to assess accurately the amount of intraracial and interracial interaction that occurs in schools, systematic observation of

student behavior in regular classroom settings is needed. There is, to our knowledge, only one such study which provides information on the amount of interracial interaction which occurs in racially-mixed classrooms. This study (Singleton & Asher, 1977) was carried out in a school which was roughly 80% white. It suggested a much greater amount of cross-race interaction than the studies performed in non-academic settings. Yet, direct comparison between studies is impeded by the fact that the students in the Singleton and Asher study were in the third grade, whereas junior high age children have been the focus of the majority of the other quantitative observational studies. This age difference is important because there is some evidence suggesting that racial isolation often increases in the late elementary and early junior high school years (Criswell, 1939; St. John, 1975).

The small group of studies cited above has yielded some initial information on the amount of intergroup interaction that occurs in desegregated schools. Yet, these studies have rarely given us any information on two other important issues: (a) what type of interaction occurs, and (b) whether the quantity or quality of interracial interaction is different for boys and girls. If the nature of students behavior is not coded, one has no way of distinguishing between, for example, positive and negative interactions. Yet, such a distinction is of obvious importance both to the practitioner and the theorist. Thus, even a rudimentary characterization of the observed behavior is a big step forward from merely assessing the quantity of interracial behavior. To our knowledge, there is only one study based on systematic quantified observation of behavior in desegregated classrooms which gives direct information on both the quantity and quality of such behavior.

Singleton and Asher (1977) coded behaviors dichotomously, as either positive or negative in affective tone.

Although Singleton and Asher (1977) found no difference in the affective tone of the interactions of boys and girls, they did find that boys showed no significant in-group preference in choosing interactants whereas, in contrast, girls did over-choose same race peers in relation to their proportion in the classroom. A few other studies using different methodologies have yielded results consistent with this finding. For example, Jansen and Gallagher (1966) found more interracial sociometric choice among boys than girls. Also, Schofield and Sagar (1977) found that boys were more likely to sit with members of a racial out-group in their school cafeteria than were girls, although both groups nonetheless showed marked in-group preference. Thus, there is some indication of a consistent pattern of greater interracial association by boys than by girls. However, the number of studies investigating this issue is small and only one has examined the quality as well as the quantity of boys' and girls' cross-race interactions.

The study reported here was designed to begin to fill some of the gaps in our knowledge of peer behavior in desegregated schools which were outlined above. Specifically, the study was designed to examine both the quantity and the quality of intraracial and interracial interaction in task-oriented settings in a racially mixed school.<sup>1</sup> Since there is a dearth both of prior empirical work and relevant theory, our basic goal was to explore the data thoroughly in order to discover relationships rather than to test numerous hypotheses. However, we did make some tentative predictions based on prior work. First, we hypothesized that children would interact more with peers of their own race than with peers of the other

race. A parallel prediction was that children would interact more with peers of their own sex than with children of the opposite sex. We predicted that boys would show less in-group racial bias than would girls. Finally, we hypothesized more interaction between black boys and white girls than between white boys and black girls. This last prediction was based on several studies which suggested that to the extent that white norms of feminine beauty are still influential in our culture, black girls may be at a real disadvantage compared to white girls in attracting boys of the opposite race (Petroni, Hirsh & Petroni, 1970; Schofield, 1977).

Decisions about which aspects of behavior to code were guided by prior qualitative analyses of those characteristics of behavior which are salient to other children and thus, affect the evolution of intergroup relations (Schofield, in press). First, and most importantly, we decided to code the affective tone of peer interactions. Since many task-oriented classroom interactions seem to involve little obvious affect, we decided to use a more differentiated scheme than that used by Singleton and Asher (1977). Thus, we coded behavior as positive, neutral, or negative. We also decided to explore the extent to which behaviors were task-oriented or social. Such information seemed important since overall group differences in the amount of task-oriented behavior might undermine or reinforce traditional racial stereotypes. Furthermore, it seemed quite possible that the relative frequency of task-oriented and social behaviors might differ in interracial and intraracial interactions in theoretically interesting ways.

It is clear that a great many characteristics of children's peer-directed classroom behavior, in addition to its affective tone and content (task-oriented, social) could be of considerable theoretical and

practical interest. Given time and resource limitations, we choose to focus on the characteristics discussed above which we felt to be especially important. Because little prior research of this nature has been conducted, we made no specific predictions about the quality of interracial and intraracial interaction.

### Method

#### The Research Site

Wexler Middle School (a pseudonym) serves approximately 1,500 students in grades six through eight in a large Northeastern city. The student body is roughly two-thirds black. A majority of Wexler's students attended de facto segregated elementary schools before entering Wexler. The white students typically come from middle- or upper-middle-class homes. Although a few of the black children are middle class, the majority are from working- or lower-class homes. Most of the students are transported to Wexler on buses which are heavily segregated because of the residential segregation of the neighborhoods in which the students live.

A wide variety of special facilities and programs were designed to attract students to Wexler and to foster a shared pride in the school. The school's unusual efforts to provide an ideal environment for interracial education have been documented elsewhere (Schofield & Sagar, 1979). School author is clearly endorse positive intergroup relations and support an extensive program of activities designed to help students to get to know one another. The fact that Wexler's students come from 26

different feeder schools is also conducive to the formation of new interaction networks since many children have none of their previous classmates in their new classes. The school's newness has greatly increased the opportunities for students to be cooperatively involved in working for shared goals. For example, large numbers of students participated in the formation of new special-interest organizations and in a variety of fund-raising activities to purchase equipment for these organizations.

Wexler's commitment to fostering equal status contact (Allport, 1954) is illustrated by its staffing. The top four administrative posts are evenly divided between blacks and whites. Similarly, each grade has two counselors, one white and one black. About 20% of the faculty is black. However, black teachers tend to be underrepresented in the academic areas and somewhat overrepresented in certain vocational education areas. More noticeably, all ten teachers' aides are black. These staffing imbalances reflect the pool of teachers available within the city school system.

Equal formal status for black and white students is supported by the policy adopted in the sixth and seventh grades of distributing black and white students into individual classes roughly in proportion to their numbers in that grade. Hence, although the black students tend to have considerably lower reading scores than the whites, they are not re-segregated by a tracking system.

The eighth grade, the site of the study reported in this paper, presents a very different picture. For historical reasons not of immediate relevance to this paper, the eighth grade is one half, rather than two-thirds, black. Also, this grade houses a prestigious city-wide accelerated academic program. Students in this program attend almost all classes together, mixing with others only in classes like homeroom

and gym, and in the lunchroom. The majority of these students have attended Wexler since sixth grade. However, a significant number of them, both black and white, transferred to Wexler as eighth graders to participate in this program. Admission to the accelerated program is based on performance on standardized tests and previous grade point average. Approximately 80% of the students in this program are white. The rest of the eighth grade is heavily black.

The study reported here was conducted in "accelerated" classes. Although this may limit the generalizability of the findings, there is a major advantage to studying the accelerated group. Since students were selected for these classes on the basis of test scores, race and academic performance are not as seriously confounded as they often are in studies of social interaction in desegregated schools. Furthermore, a companion study, which will be mentioned briefly in this paper, explored identical questions in the sixth grade which was not tracked into regular and accelerated groups and which, in sharp contrast to the honors classes, was about 70% black. Comparison of the results of these two studies gives useful information on the robustness of the phenomena which will be discussed here.

#### Selection of Classes for Observation

There were eight honors classes in Wexler's eighth grade. (Children were grouped into classes which stayed basically constant in composition as they rotated through different academic subjects.) We selected the four classes to be observed as follows. First, two honors classes were eliminated because they did not contain enough transfer students who entered Wexler as eighth graders. (A part of the study not discussed

here was designed to focus on differences in interracial behavior between students who had experienced two years in Wexler's well-structured integrated sixth and seventh grades and those who had only segregated schooling before eighth grade.) Then, two other classes were eliminated because they did not have at least two members of each of the four sex-race subgroups of interest (i. e., white boys, black boys, white girls and black girls). The remaining four groups were observed. School officials said that assignment to specific honors classes was based primarily upon scheduling considerations and that there was no a priori reason to believe that the students in the four classes observed were different from those in the other four classes.

#### Selection of Subjects Within Classes

All black children in all four classes selected to participate in the study were observed, as were all white girls. Since there was a relatively large number of white boys in the classes observed, a sub-sample of this group was randomly selected for observation so that we would not spend too high a proportion of observation time on this group. The final sample consisted of 41 white boys, 28 white girls, 10 black boys, and 22 black girls.

#### Selection of Specific Class Settings for Observation

As discussed previously, our aim was to observe peer behavior in academic class settings. Each class selected for observation as indicated above rotated through five academic subjects taught by different teachers - math, reading, science, language arts, and social studies. We decided to observe students only in language arts, social studies and science classes. This decision was based on the fact that at Wexler math and reading are

generally taught in a very individualized manner. Furthermore, with rare exceptions, the reading and math classrooms are smaller and more crowded than other classrooms which makes it difficult for observers to remain relatively unobtrusive. Second, we decided to eliminate from consideration all classrooms in which the teacher assigned seats since assignment policies would obviously greatly influence interaction patterns. Third, each class of students was observed in two different subjects so that our estimate of any child's behavior would not be dependent on observations made in just one classroom.

Thus, there were three possible classroom settings - language arts, science, social studies - in which each of the four classes selected for observation could be observed. Of these twelve possible settings, one was eliminated because a teacher refused to cooperate and one because the teacher assigned seats. From the remaining ten class settings eight were selected in a way designed to optimize balance in the number of language arts, science and social studies classes observed and efficiency in the use of observer's time at the school.

Observers. Three graduate students, a black female, a white female, and a white male, were given intensive training with the behavior coding system during a period of three months. Since observers had to be able to identify the individual children whose behavior was being coded, each observer was assigned to a specific set of classrooms. Each group of children, however, was observed by two different observers.

Observers followed a 15 second observation-coding cycle, with five seconds devoted to observing a designated child, and 10 seconds for coding the child's behavior and locating the next designated child in the sequence. The observer then viewed the second child, coded his or her

behavior, moved on to the third child, and so on until all designated children in the classroom had been observed.<sup>2</sup> Then, the observer simply moved to the top of the list and cycled through the list of children again. The children under study in a particular class were observed in a predetermined random order.<sup>3</sup> Although this order did not vary over the course of the study, observers began the sequence at a different point for each new observation period.

Reliability. Reliability checks (i.e., two observers simultaneously coding the behavior of the children in a class) were conducted at about a dozen points during the data gathering phase. Agreement indices (i.e., number of agreements divided by total number of observations) of reliability indicate that, with trials in which only one observer recorded an interaction counted as disagreements, the mean agreement on the race-sex category of the interactant was .80. The reliability of the coding of tone (positive, neutral, negative) was .78, while the reliability of the coding of content (task-oriented, ambiguous, nontask or social) was .76. Cohen's kappa (Cohen, 1968), a very conservative measure of reliability which disregards agreements expected by chance, indicated that the reliability for the coding of the race and sex of the interactant was .72. The reliability of the coding of the tone of the interactions was .55, while the reliability of the coding of the content of the interactions averaged .50. Although we had hoped for better levels of interobserver agreement, it is important to keep in mind that these relatively low indices simply indicate that the behavior coding was not sufficiently reliable to permit inferences about any single behavioral episode; such was never a goal of this study. The reliability levels obtained indicate that the coding system was capturing a substantial "true score" component in the trial

level data which can be presumed to be systematic and cumulative over repeated observations (in contrast to the error component which is assumed to be random and non-cumulative; see Hartman, 1977). Thus, the goal of the study, the making of inferences regarding the characteristics of the interactions of groups of subjects over a four month period, was realizable.

Data gathering. Data gathered during the period from February 1, 1979 through May 30, 1979 were used in the analyses reported here. Each group of children was scheduled for observation three or four times a week (i.e., two different observers viewing each group in two class settings). All sessions except those in which observer reliability was being checked were observed by only one graduate student. Observations of the groups were carried out on all five "school days" and at different times of the day so that any cycles in the children's behavior throughout each week or day would not systematically bias the data. Unfortunately, on some days observation was either precluded (e.g., snow days, vacations, observer illnesses) or an observation period was omitted because the collection of a significant amount of useful data appeared unlikely (e.g., on testing days). Nevertheless, data from 163 separate observation sessions were included in these analyses. Thus, no individual observation period accounted for more than 2% of the total number of observations.

Individual observation sessions. Observation sessions coincided with school class periods, lasting from 40 to 60 minutes depending on the length of the class. Observers sat in a position which gave them a good view of the students but which was not too obtrusive. This position could vary from session to session.

## Results

Over the course of four months, observers recorded a total of 4,697 peer interactions over 19,275 five-second coding intervals. This large body of data was reduced to a series of cumulative scores for each subject. First, and most simply, we calculated the number of peer interactions recorded for each child relative to the total number of observations of that child. Second, we counted interactions with children of each of the four sex-race groups as a proportion of each subject's total set of peer interactions. Finally, we counted each of the several types of interactions (e.g., positive, negative, and neutral) as proportions of each subject's total set of peer interactions.

Overall Frequency of Interaction

This study is focused primarily on the patterning of white and black boy's and girl's ingroup and intergroup interactions. In order to interpret the data, however, it is useful to know whether the proportion scores are based upon similar or grossly different overall interpersonal interaction rates for each of the four sex-race subject groups. To explore this question, we conducted a  $2 \times 2$  analysis of covariance (subject race by subject sex) on the children's overall peer interaction totals, adjusted for variations in the frequency with which each subject was observed. The analysis of covariance indicated that the effects of sex of subject,  $F (1, 95) = 2.83$ ,  $p < .10$ ; race of subject,  $F (1, 95) = .10$ ,  $p < .75$ ; and the sex by race interaction,  $F (1, 95) = .23$ ,  $p < .63$  were not statistically significant, although there was a tendency for males to interact with others slightly more than females.

Adjustment of Scores

Since the number of potential interactants in a particular sex-role subgroup varied according to the racial and sexual makeup of the class and daily classroom attendance, we planned to adjust interaction rate scores for the various interactant groups accordingly. We calculated both the proportion of each child's total set of peer interactions which involved interactants from each of the four sex-race subgroups (Observed Rates) and the proportion of all available interactants who belonged to the corresponding sex-race groups (Expected Rates). We then calculated two different sets of adjusted scores, one expressed as the ratio of Observed to Expected Rates, the other as the arithmetic difference between the Observed and Expected Rates.

Preliminary analyses suggested that these adjustments had not removed the spurious influence of class composition upon calculated interaction rates as hoped, but had instead simply reversed the relationship. That is, the adjusted rates of interaction with members of any group tended to be lowest in the classes in which the group was most strongly represented. As shown in Table 1, the expected positive relationship between the unadjusted rates and class composition is quite small and the equal magnitude negative correlations between class composition and the two types of adjusted rates indicates that the adjustments had imposed an unwanted negative relationship.

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Insert Table 1 about here

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The small correlation between the unadjusted interaction rates and the classroom composition indices indicates that the children interacted

Table 1

Means of the Correlations of Interaction Rate

Indices and Class Composition Indices<sup>a</sup>

<u>Interaction Score Type</u>	<u>Indices of</u> <u>Class Composition</u>	<u>Adjusted Scores</u>	
		<u>Difference</u>	<u>Ratio</u>
Unadjusted Scores	.18	.94	.86
Adjusted Scores			
Ratio (Observed/Expected)	-.18	.92	
Difference (Observed/Expected)	-.18		

<sup>a</sup>There were four separate classroom composition indices (i.e., the number of white male interactants, black male interactants, white female interactants, and black female interactants) and four separate scores (i.e., number of interactions with white male interactants, black male interactants, white female interactants, and black female interactants) within each score type (e.g., adjusted ratio type). Thus, each figure in the table represents the mean of four relevant correlations: the correlation between the number of white male interactants and the number of interactions with white male interactants, the correlation between the number of black male interactants and the number of interactions with black male interactants, and so on.

primarily within small subgroups whose composition had little to do with the composition of the larger academic group.<sup>4</sup> Survey research on intergroup contact in desegregated schools suggests a similar conclusion (Roberts, 1980). Consequently, in our analyses of interactant choice, we decided to use the unadjusted proportion scores which have a somewhat more straightforward interpretation.<sup>5</sup>

#### Interaction Rate Results

Table 2 shows the distribution of each subject group's interaction with children in the four sex-race categories, expressed as proportions of the total number of interactions with all interactant groups. As anticipated, the peer interactions were predominantly ingroup, with 62% of all coded peer interactions occurring between children of the same sex and race. In contrast, under the unlikely null hypothesis of purely random selection of interactants, approximately 30% of the interactions would be expected to be within gender and racial group. The study conducted in the sixth grade, which was mentioned earlier, also indicated that interactions were predominantly ingroup, with 63% of all coded peer interactions occurring between children of the same sex and race.

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Insert Table 2 about here

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The four unadjusted proportion scores (e.g., proportion of all peer interactions which occurred with white males) for each subject were entered into a  $2 \times 2 \times 2 \times 2$  analysis of variance, where the grouping factors were the race and sex of subject, and the trial factors were the race and sex of the interactant.<sup>6</sup>

Table 2

Distribution of Observed and Expected Peer Interactions  
(Proportions) Over Interactant Categories

<u>Subject</u> <u>Group</u>	<u>Interactant Group</u>			
	<u>White</u>	<u>Black</u>	<u>White</u>	<u>Black</u>
	<u>Male</u>	<u>Male</u>	<u>Female</u>	<u>Female</u>
<u>White Male</u>	.71	.16	.08	.05
	(.44)	(.10)	(.27)	(.19)
<u>Black Male</u>	.53	.30	.04	.12
	(.35)	(.14)	(.22)	(.29)
<u>White Female</u>	.18	.04	.63	.14
	(.47)	(.10)	(.24)	(.19)
<u>Black Female</u>	.09	.06	.21	.64
	(.40)	(.15)	(.24)	(.21)

Note: Figures in parentheses indicate the proportions expected under the assumption of random interactant choice within each classroom (i. e., expected peer interaction rate).

Results of the analysis of variance indicated that, as predicted, students interacted primarily with other students of their own sex,  $F (1, 97) = 642.9$ ,  $p < .001$ . This effect reflects the fact that 83% of all the recorded peer interactions occurred within same-sexed pairs, in contrast to the 50% expected in a pattern of random interaction. Parallel results were obtained in the sixth grade with 88% of all interactions occurring between same-sex interactants.

The Subject Race by Interactant Race effect also reached statistical significance,  $F (1, 97) = 56.61$ ,  $p < .001$ . Approximately 72% of the recorded peer interactions occurred between same-race interactants, in contrast to the 60% expected if interactants were chosen without regard to race. Parallel results were obtained in the sixth grade, with 70% of all recorded peer interactions occurring between same-race interactants.

The strong tendency for school children to interact primarily within gender and racial categories has been documented previously, and should in fact, be apparent to the careful observer even without formal data gathering and analysis. Less attention, though, has been given to the more complex, but potentially important, joint influences of race and gender. An earlier study of cafeteria seating patterns at Wexler Middle School (Schofield & Sagar, 1977) indicated a higher rate of interracial adjacencies among boys than among girls. In the present study, we tested the generalizability of this gender-related pattern to classroom behavior. The analysis indicated that, as expected, the four-way interaction, Subject Sex by Subject Race by Interactant Sex by Interactant Race effect, was statistically significant,  $F (1, 99) = 32.6$ ,  $p < .001$ .

Table 3 presents summary statistics which clarify the effects of the joint influences of race and sex on intergroup interactions, in light of the different number of potential interactants in each subgroup.

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Insert Table 3 about here

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Planned comparisons indicated that boys interact within and cross race at nearly the rate which would be expected if race had no effect on interaction patterns,  $t$  (50) = 1.03, n.s. In contrast, the girls' within sex interaction pattern deviates significantly from that pattern which would be expected if race were an insignificant factor in interaction,  $t$  (49) = 12.01,  $p < .001$ . Parallel, although less striking, results were obtained in the sixth grade, with 31% of all interactions between boys occurring across racial lines, while only 26% of all interactions between girls occurred across racial lines, a difference which is statistically significant,  $t$  (68) = 2.87,  $p < .01$ .<sup>7</sup>

Just as the degree of racial ingrouping seems to be partially gender-dependent, it might also be reasonable to expect that the degree of gender ingrouping might be partially race dependent. In the sixth grade, the gender barrier was significantly less important in the case of black students, whose same race interactions were about twice as likely as those of white students to cross gender lines (14.7 versus 6.5 percent, respectively). In the eighth grade, this effect was not obtained, however. A pairwise comparison revealed that the proportion of whites' same race behavior which was cross-sex (.15) was not significantly different,  $t$  (100) = .67, n.s., than the proportion of blacks same race behavior which was cross-sex (.13).

Cross-race, cross-sex interactions were generally quite infrequent,

Table 3

Proportion of Within-Sex Interactions Which Occurred  
Within and Across Racial Lines

	<u>Within Race</u>	<u>Cross Race</u>
Male-Male	.71 (.70)	.29 (.30)
Female-Female	.78 (.52)	.22 (.48)

Note: Figures in parentheses indicate the proportions  
expected under the assumption of random inter-  
actant choice within each classroom.

accounting for approximately 5 percent of all interactions. A t-test revealed that contrary to our prediction, those involving white male subjects and black female interactants were not less common than those involving black male subjects and white female interactants,  $t(1, 49) = .26$ , n.s.

#### Interaction Quality Analysis

The results discussed up to this point relate to the quantity or rate of interaction between subjects and interactants of the four sex-race groups. Now we turn to analyses of the quality (tone, content) of those peer interactions which did occur. The extremely low per subject rates of cross-sex interaction precluded any meaningful analysis of variance which included cross-sex interaction data. Thus, the results which follow apply only to within sex interactions.

#### TONE

As previously indicated, observers characterized the tone of each recorded peer interaction as (1) positive, (2) neutral/ambiguous, or (3) negative/aggressive. Recognizing the evaluative connotations of these category labels, we must emphasize that our coding procedures stressed descriptive rather than evaluative criteria. Facial expressions, verbal statements, and overt motor behaviors which were negative in appearance (from a conventional, middle-class point of view<sup>8</sup>) were placed automatically in the "negative/aggressive" category regardless of the actor's presumed intent. Physical blows, verbal or non-verbal threats, obscene gestures, and insults were all regarded "negative/aggressive," by definition, even when the observers suspected that the specific behavior being coded was playful or meant in jest. This approach,

although not wholly satisfying, was deemed necessary because of the unreliable relationship between affect and overt behaviors and by the resulting potential for undefined and uncontrolled biases in the observers' subjective inference processes. In the present analysis, then, differences in "TONE" do not necessarily indicate differences on an affective or friendly/unfriendly dimension; they do reflect differences in overt interactive style among the various subject groups.

Table 4 shows the proportional distribution (across the three tone categories) of interactions of black and white subjects with black and white interactants.

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Insert Table 4 about here

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A  $2 \times 2 \times 2 \times 3$  repeated measures analysis of variance was used to analyze these data. The independent variables were sex of subject, race of subject, race of interactant and interaction tone (positive, neutral, negative). A main effect for tone,  $F(2, 166) = 172.8, p < .001$ , reflects the fact 57% of all peer interactions were coded as positive, 42% were coded as neutral, and only 1% were coded as negative. No significant differences in the proportion of interactions in the three levels of tone were found as a function of subject sex or race, or interactant race.

There was a slight trend ( $p < .12$ ) for the proportion of interactions with white interactants which are positive to be higher than the corresponding proportion with black interactants (means of .60 and .55, respectively). In the sixth grade, a somewhat similar finding, that white subjects had proportionally more positive interactions than black subjects (means of .68 and .51, respectively) achieved statistical

Table 4

Proportional Distribution of Interactions of Black and White  
Subjects and Interactants Across the Three Tone Categories

<u>Subject Groups</u>	<u>Tone</u>	<u>Interactant Groups</u>	
		<u>White</u>	<u>Black</u>
White	Positive	.57	.55
	Neutral	.42	.45
	Negative	.01	.00
Black	Positive	.63	.55
	Neutral	.36	.45
	Negative	.01	.00

significance ( $p < .001$ ). In both the sixth and eighth grades, black subjects' peer behaviors were not any more likely to be coded as negative than the white subjects' peer behaviors.<sup>9</sup>

Content. Table 5 shows the proportional distribution of the interactions of black and white subjects with black and white interactants across the three content categories.

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Insert Table 5 about here

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The content data were analyzed in a manner similar to that used to analyze the tone data. A main effect for task orientation,  $F (2, 166) = 4.19$ ,  $p < .02$ , reflects the fact that 32% of all peer interactions were coded as task oriented, 29% ambiguous, and 39% non-task oriented. It should be noted that these overall rates reflect characteristics of both the behavior of the students and the definitions of "task," "ambiguous," and "non-task" which we built into our coding system. No significant differences in the proportion of interactions in the three levels of task orientation (task, ambiguous, non-task) were found as a function of subject sex or race, or interactant race. There was a slight trend ( $p < .07$ ) for a higher proportion of the cross race interactions to be task-oriented than the same race interactions (means of .37 and .29, respectively). Analysis of the sixth grade data reveals no such trend.

#### Discussion

It may not be particularly surprising to discover that, overall, both race and sex affect interactant choice in desegregated schools. Yet, on

Table 5

Proportional Distribution of Interactions of Black and White  
Subjects and Interactants Across the Three  
Content Categories

<u>Subject Group</u>	<u>Content</u>	<u>Interactant Groups</u>	
		<u>White</u>	<u>Black</u>
White	Task	.28	.40
	Ambiguous	.29	.28
	Non-task	.42	.32
Black	Task	.34	.30
	Ambiguous	.24	.29
	Non-task	.42	.40

closer inspection, this study's data do suggest some very interesting and unexpected conclusions. Note for example, that race has essentially no effect on boys' interactant choices. Given the almost total racial cleavage found in the majority of earlier behavioral studies, this is quite surprising. Several factors may help to account for the boys' behavior. Among the most likely are: (a) the rough control for academic performance in this study achieved through conducting the research in classes whose students have been selected for their high levels of academic achievement, (b) the fact that the majority of the eighth grade subjects had spent two years in Wexler's sixth and seventh grades, which previous research (Schofield & Sagar, 1977; Schofield, 1979) has suggested had a positive impact on intergroup relations, (c) the school's generally strong efforts to create a positive interracial atmosphere, and (d) the fact that classroom behavior was studied rather than behavior in less structured settings like hallways and cafeterias. Comparison of the interaction patterns found in the sixth grade with those in the eighth grade suggest that the last two factors, by themselves, are not enough to account for our findings in the eighth grade; for while sixth grade boys interact interracially more than the girls, they still show a definite ingroup preference.

Although the eighth grade boys show little racial ingroup preference, the girls show a strong propensity to interact with others of their own race. This finding exactly parallels the finding of the one previous quantitative observational study of interracial behavior in classroom settings (Singleton & Asher, 1977). These two studies are in turn consistent with a few earlier studies which use alternative methodologies and suggest more interracial interaction among boys than girls (Jansen &

Gallagher, 1966; Schofield & Sagar, 1977). There is considerable evidence that, compared to boys, girls tend both to interact in smaller groups (Laosa & Brophy, 1972; Lever, 1974; Omark & Edelman, 1973) and to be less accepting of newcomers (Eder & Hallinan, 1978). Both of these factors might well contribute to less cross-racial acceptance among girls than among boys. Yet, it is clear that further research is needed to clarify our understanding of the processes responsible for this phenomenon.

In spite of the fact that the girls in this study interact across racial lines less than the boys, both girls and boys, nonetheless, interact somewhat more than earlier studies conducted in non-academic settings would lead one to expect. For example, Silverman and Shaw (1973) found that interracial interactions ranged from a low of .67 percent of all interactions observed as students left school for the day to a high of 10.3 percent in three schools. These junior high schools were from 30 to 50 percent black. In sharp contrast, over one-quarter of the peer interactions in this study were cross-race. Like some of the children in the Silverman and Shaw study, students at Wexler were in classes which were roughly 30 percent black, so the very major difference in interracial interaction rates is striking.

It should also be noted that at Wexler, racial ingrouping was noticeably less strong than was gender ingrouping. This finding is consistent both with earlier results from research in non-academic settings at Wexler (Schofield & Sagar, 1977) and with most other studies which have explored this issue (Krenkel, 1972; St. John & Lewis, 1975; Singleton & Asher, 1977, 1979). Although the studies of school children cited above are consistent in their findings, it is important to keep in mind in interpreting the meaning and importance of this finding that adult patterns

of association seem to be quite different from childhood patterns. Specifically, whereas most adults develop close, and often lasting, relationships with those of the other sex, they do not appear to develop or maintain much contact with members of other racial groups.

The data on the affective tone of peer interactions suggest that the large majority of these interactions at Wexler, both interracial and intraracial, are relatively friendly. Consistent with Singleton and Asher's results, our data suggest both an extremely low frequency of negatively-toned behavior in the classroom and no tendency for classroom interracial interactions to be more negative than intraracial interactions. As was the case for most of our findings, this also held true in the very different conditions of Wexler's sixth grade, although in that grade, we did find that white children were more likely to engage in overtly positive behaviors than blacks while blacks tended to engage in more neutral behaviors than whites.

At first glance, one might wonder how our data can be reconciled with numerous primarily qualitative studies of life in desegregated schools which suggest that the "hasseling" of whites by blacks is a frequent and recognized phenomenon (Hanna, in press; Scherer & Slawski, in press; Schofield, in press). The answer may be that such studies also generally suggest that such "hasseling" occurs most frequently in unsupervised settings such as the rest rooms, stairwells and hallways. If this is the case, it is reasonable to speculate that increased supervision of such areas might have a significant effect on black-white relations in desegregated schools.

In summary, the results of this research are surprisingly similar to those of the one other quantitative observational study of peer behavior

in desegregated classrooms (Singleton & Asher, 1977) in spite of major differences in the age of the children and the location of the schools. Specifically, these studies both suggest that race is a less important grouping criterion in classrooms than might have been expected from previous studies in non-academic settings and that boys are more likely to interact interracially than are girls. They both also found a very low frequency of negative behavior in classrooms and no indication that interracial interactions are less positive than intra-racial interactions. Although both of these studies make a clear contribution to the existing literature by beginning to examine the quality as well as the quantity of peer behavior in desegregated schools, it is clear that further more refined and differentiated characterization of such behavior would be very useful.

## Footnotes

<sup>1</sup>At many points in this paper, we refer to our coding of peer "interaction." Strictly speaking, we coded "peer-directed behaviors," rather than interactions, since we cannot be sure that the behavior of the peer "source" was noted and acted upon (in some way) by the peer "target" in every case. However, we use the term interaction since it seems somewhat less cumbersome than the available more precise alternative. Furthermore, a very high proportion of the coded behaviors did indeed seem to be quick "slices" out of on-going interactions.

<sup>2</sup>For each recorded interaction we attempted to identify and record one primary interactant. Where multiple interactants were involved, the single interaction was allocated fractionally to the various interactant categories represented. For example, if the subject interacted with one white girl, two black girls, and the teacher within a single coding interval all interactants were recorded, and we subsequently counted 1/4 of an interaction with the white female, 1/2 of an interaction with the black female, and 1/4 of an interaction with the teacher. When students were not interacting with others, they were coded as being alone. The fact that students were frequently found working or playing in a solitary manner accounts for the rather large discrepancy between the number of coding intervals and the number of peer interactions actually recorded.

<sup>3</sup>Each student was assigned a unique number in the initial stages of the project. This number was then pre-coded onto the observational coding sheets prior to entering the classes. The use of codes was desirable in terms of sheet format considerations, and more importantly,

it minimized the possibility of a potentially reactive incident if a child were to glance at the coding sheets.

<sup>4</sup>This pattern undoubtedly reflects, in part, our decision to observe classes whose teachers left the students largely free to determine their own interactant choices. Such practices as alphabetically assigned seating or formation of mixed work groups should induce a much greater relationship between class composition and actual interaction patterns (as well as more intergroup interaction; see Schofield & Sagar, 1979).

<sup>5</sup>As was mentioned previously, a very similar study in the non-tracked sixth grade was carried out concurrently with the study reported here. As will become apparent, interaction rate results of the sixth grade were strikingly similar to those of the eighth grade, despite the fact that the sixth grade class composition was very different (i.e., the four sex-race subgroups were very nearly equal in size). Thus, class composition appears to bear little relationship to the results reported here.

<sup>6</sup>Because the within cell distributions of these proportion scores may have violated one assumption of the analysis of variance paradigm — normal distribution — an arc sin transformation of the scores was performed, and the adjusted scores were entered into an identical analysis of variance (Mosteller & Tukey, 1968, p. 199). The results of the analysis of transformed scores vary only slightly from the results of the analysis of untransformed scores which are discussed in this paper (cf. Kirk, 1968, p. 63).

The four unadjusted proportion scores of each subject were also entered into a  $2 \times 2 \times 2 \times 2$  repeated measures analysis of covariance,

where the grouping factors were the race and sex of the subject, and the trial factors were the race and sex of the interactant. As was previously pointed out, the number of potential interactants in a particular sex-race subgroup (e.g., white males) varied according to the racial and sexual makeup of the class and classroom attendance. Accordingly, a covariate which changed over the four levels of the two trial factors (i.e., proportion of peer interactions occurring with white male, black male, white female, and black female interactants), and which corresponded to the number of potential interactants for each subject at each level (e.g., number of white males in class), was entered into the analysis. The inclusion of the covariate failed to alter the basic pattern of results. All results discussed in this paper were obtained in both the ANOVA and the ANCOVA. The results from the ANOVA and unadjusted means are discussed in this paper because they facilitate presentation.

<sup>7</sup> In the sixth grade both males and females interacted with children of the other race at rates significantly lower than those expected if race were not a factor in interactant choice.

<sup>8</sup> Not only did this viewpoint come easily to our middle class observers, but it also appears to correspond roughly to teachers' and administrators' usual definitions of appropriate student behavior.

<sup>9</sup> If we had not used such a broad definition, the rate of "negative/aggressive" behavior would have been even lower than the extremely modest rate reported here.

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